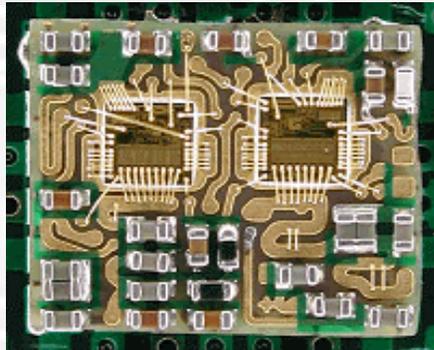




System in Package (SiP)

Description of a SiP

SiP (System-in-Package) has rapidly achieved acceptance as a technology driver for high density, small component modules. SiP's contain one or more integrated circuits, usually combined with passive components within a single package or module to form a functional electronic system contained within an IC Package format. IC's may be placed side-by-side or stacked. Generally, the IC's are wire bonded or attached using flip chip technology. Other components and discrete passives such as resistors and capacitors are accurately placed on the common substrate by automated surface mount technology. The finished SiP is then encapsulated or over molded. I/O's are located on the underside of the package substrate.



Typical system in package concept (top view) shown before plastic over molding or encapsulation

Benefits of System in Package

- increased density and functionality in a smaller size
- application design flexibility (Si, GaAs, MEMS, MOEMS, SiGe)
- packaging flexibility (lead frame, various substrates, modular)
- quick to market solution
- reduces both pc board space utilization and the number of discrete components

How Promex Technology Provides a One Stop Solution

PROMEX integrates broad competencies of materials-centric packaging expertise, process knowledge and assembly capabilities to enable customers to quickly and efficiently launch new products to market ensured of high first pass yield. Scalable manufacturing capacity spans the range of development prototyping through pre-Asia, onshore volume production.

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Silicon Valley's Packaging Foundry



SiP Development:

- materials-centric custom package development
- 2D, 3D, SMT, stacked die, flip chip
- materials and process synergy
- package design & component layout from your schematic
- BoM and component selection
- substrate design utilizing specialized local partners
- prototypes, beta production, production scale-up
- "fast tracked" NPI (new product introductions)

Fully Integrated Assembly & Process Flow:

- wafer sawing including 300 mm
- automatic die attach for production volumes
- epoxy or eutectic solder
- gold ball bonding to 42 micron pitch, aluminum wedge bonding, ribbon bonding, controlled loop height RF wedge bonding, copper wire bonding
- plastic over molding using RoHS compliant mold compound
- automated dispense encapsulation
- in-house, fully automated SMT (surface mount technology) lines optimized for lead free solder processing
- flip chip technologies, including ACF
- class 1,000 engineered clean room with Class 100 available under laminar flow hoods
- on line x-ray
- real time SPC metrics utilized throughout the continuous process flow
- rigid substrates, flexible substrates, ceramic substrates & land grid arrays
- thick film design, printing and processing of thick film alumina substrates
- substrate/ module solder balling
- ink stamp marking (including logo) and serialized laser marking
- production volume assembly in an ISO 9001:2000 environment

Silicon Valley's Packaging Foundry

PROMEX integrates IC assembly and materials-centric packaging expertise with broad process and technical knowledge, enabling customers to take new products to market faster than by any other route. A large selection of open tooled JEDEC standard and custom plastic over molded QFN/ TQFN and DFNs are available. Promex is a recognized leader in stacked die, thin molded, 2D, 3D, SMT and RoHS compliant packaging. SiPs, MEMS, MOEMS, MCM, LGA and RF packaging, process development and assembly. World wide customers are provided quick turns, development prototyping, NPI, scalable US based onshore and pre-Asia volume production.

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